

## Claims

1. Extruder comprising an extruding screw, said extruding screw being characterised by between 2 and 6 thread starts and a pitch angle of between 28 and 45 degrees, preferably between 32 and 42 degrees.
2. Extruder according to claim 1 comprising cooling means, the cooling means being preferably constituted by a cooling circuit wherein a cooling liquid is circulated.
3. Extruder according to claim 2 wherein cooling liquid is selected within the group consisting of ammonia or nitrogen.
4. Extruder according to claim 3 wherein the screw comprises between 3 and 4 thread starts and the cooling liquid is ammonia.
5. Extruder according to claim 1 wherein the screw LT/De ratio of between 2 and 10, preferably between 2 and 5, more preferably between 2 and 4.
6. Extruder according to claim 1 wherein the H/wc ratio is under 0.2, preferably over 0.1.
7. Extruder according to <sup>claim 1</sup> ~~any preceding claim~~ wherein the extruder is a single screw extruder.
8. Extruder comprising an extruding screw characterised by a pitch angle of between 28 and 45 degrees, preferably 32 and 42 degrees, and a LT/De ratio of between 2 and 10, preferably between 2 and 5, more preferably between 2 and 4.

9. Extruder according to claim 8 comprising cooling means, the cooling means being preferably constituted by a cooling circuit wherein a cooling liquid is circulated.
- 5 10. Extruder according to claim 9 wherein the cooling liquid is selected within the group consisting of ammonia or nitrogen.
- 10 11. Extruder according to claim 10 wherein the screw comprises between 3 and 4 thread starts and the cooling liquid is ammonia.
- 15 ~~12. Extruder according to <sup>claim 8</sup> any preceding claim 8 to 11 wherein the extruder is a single screw extruder.~~
- 20 13. Process for the manufacturing of frozen food product, wherein a food composition is mixed, aerated and cooled down to a temperature of between  $-4^{\circ}$  and  $-7^{\circ}$  and then processed in an extruder for further cooling down to a temperature of between  $-12^{\circ}$  and  $-20^{\circ}$ , characterised in that the extruder comprises cooling means, the cooling means being preferably constituted by a cooling circuit wherein a cooling liquid is circulated and further comprises an extruding screw having a pitch angle of
- 25 between 28 and 45 degrees, preferably between 32 and 42 degrees
- 30 14. Process according to claim 13 wherein the screw has a LT/De ratio of between 2 and 10, preferably between 2 and 5, more preferably between 2 and 4.

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